



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/731,799	12/08/2000	Masahira Deguchi	826.1641 (JDH)	7224
21171	7590	03/25/2005	EXAMINER	
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			STEVENS, THOMAS H	
			ART UNIT	PAPER NUMBER
			2123	

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/731,799

Applicant(s)

DEGUCHI, MASAHIRA

Examiner

Thomas H. Stevens

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. Claims 1-16 were examined.

***Response to Applicant's Arguments (Second Office Action)***

***Telephone Conversation with Applicant***

2. In response to the telephone conversation on 3/3/05, this office action replaces the original first action mailed on 1/21/05.

***Claim Rejections - 35 USC § 112***

3. Applicant's are thanked for addressing this issue. Rejection to claims 2, 8, 9 and 12 are withdrawn. However, examiner suggest replacing "unnecessary" to "redundant" and 'arrangement" with either "Cartesian" or "dimension" for claims 2 and 8 respectively.

***Claim Rejections - 35 USC § 101***

4. Applicant's are thanked for addressing this issue. Rejection is withdrawn.

***Claim Rejections - 35 USC § 102***

5. Applicant's are thanked for addressing this issue. Applicant's arguments are persuasive, thus previous rejection is withdrawn. However, examiner has sited new art by Kramer et al.

**(Third Office Action)**

**Claim Interpretation**

6. Office personnel are to give claims their "**broadest reasonable interpretation**" in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969). See \*also *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) ("During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow") .... The reason is simply that during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed .... An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process. The examiner equates the terms "redundant" and "unnecessary".

**Claim Rejections - 35 USC § 103**

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

Art Unit: 2123

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-16 are rejected under 35 U.S.C. 103(b) as being unpatentable by Migdal et al., (U.S. Patent 6,208,347 (2001)) in view of Kramer et al., (U.S. 5,452,238 (1995)). Migdal et al., teaches a system and method for modeling 3D objects with the capability of deleting redundant shapes; but doesn't teach geometric constraint of geometric objects. Kramer et al., teaches a method for finding possible configurations of a system having a collection of geometric entities and constraints which encompasses sketching and design, geometric modeling for CAD, kinematic analysis of robots and linkage mechanism (abstract).

At the time of invention, it would have been obvious to one of ordinary skill in the art to modify Kramer et al. by Migdal et al. to yield a solid structure (Kramer: column 3, lines 13-15).

**Claim 1:** A model optimization apparatus, comprising: a detection unit detecting one or more redundant shapes (Kramer: column 4, lines 10-15) from a plurality of shapes forming a three-dimensional model of an object by comparing shape coordinates (Kramer: column 6, lines 50-5 with figures 6, 6a, 6b,6c), and generating a list of shapes (Kramer: column 11, lines 26-35 with Migdal: column 22, lines 24-35) to be deleted and a list of shapes to be amended among the one or more redundant shapes (Migdal: column 6, lines 60-64) responsive to the coordinate based comparison; a deletion unit deleting shape information of shapes in the list of shapes to be deleted, (Kramer: column 11, lines 26-35 with Migdal: column 22, lines 24-35) and amending shape information of shapes in the list of the shapes to be amended; and a construction unit reconstructing a three-dimensional model (Migdal: column 3, lines 20-31) of the object according to remaining shape information including the amended shape information and shape information of shapes other than one or more redundant shapes (Kramer: column 13, lines 45-67).

**Claim 2:** The apparatus according to claim 1, (Kramer: column 4, lines 10-15; Kramer: column 6, lines 50-5 with figures 6, 6a, 6b,6c; Kramer: column 11, lines 26-35 with Migdal: column 22, lines 24-35; Migdal: column 3, lines 20-31; Kramer: column 13, lines 45-67) wherein: said detection unit detects an unnecessary shape not contributing for an outline of the three-dimensional model from the plurality of shapes (Kramer: column 13, lines 45-67); and said deletion unit deletes the shape information about the unnecessary shape (Kramer: column 13, lines 45-67).

**Claim 3:** The apparatus according to claim 2, (Kramer: column 4, lines 10-15; Kramer: column 6, lines 50-5 with figures 6, 6a, 6b,6c; Kramer: column 11, lines 26-35 with Migdal: column 22, lines 24-35; Migdal: column 3, lines 20-31; Kramer: column 13,lines 45-67) wherein: said detection unit detects two shapes having same outline information and offsetting each other (Kramer: column 13, lines 45-67); and said deletion unit deletes the two shapes (Kramer: column 3, lines 55-59).

**Claim 4:** The apparatus according to claim 2, (Kramer: column 4, lines 10-15; Kramer: column 6, lines 50-5 with figures 6, 6a, 6b,6c; Kramer: column 11, lines 26-35 with Migdal: column 22, lines 24-35; Migdal: column 3, lines 20-31; Kramer: column 13,lines 45-67) wherein: said detection unit detects two shapes having different outline information and offsetting each other (Kramer: column 3, lines 55-59); and said deletion unit deletes the two shapes (design choice: Kramer, column 3, lines 55-59).

**Claim 5:** The apparatus according to claim 1, (Kramer: column 4, lines 10-15; Kramer: column 6, lines 50-5 with figures 6, 6a, 6b,6c; Kramer: column 11, lines 26-35 with Migdal: column 22, lines 24-35; Migdal: column 3, lines 20-31; Kramer: column 13,lines 45-67) wherein: said detection unit detects two or more shapes which can be represented by one shape from the plurality of shapes (Kramer: column 13, lines 50-67); and said deletion unit integrates shape information of the two or more shapes into shape information of the one shapes (design choice: Kramer, column 3, lines 55-59 with Migdal: column 10, lines 15-21).

Art Unit: 2123

**Claim 6:** The apparatus according to claim 5, (Kramer: column 4, lines 10-15; Kramer: column 6, lines 50-5 with figures 6, 6a, 6b,6c; Kramer: column 11, lines 26-35 with Migdal: column 22, lines 24-35; Migdal: column 3, lines 20-31; Kramer: column 13, lines 45-67; Kramer: column 13, lines 50-67; Kramer: column 13, lines 50-67) wherein: said detection unit detects two shapes having same sectional shape information; and said deletion unit deletes shape information of one of the two shapes, amends shape information of the other shape, and integrates shape information of the two shapes into shape information of one shape (design choice: Kramer, column 3, lines 55-59 with Migdal: column 10, lines 15-21).

**Claim 7:** The apparatus according to claim 5, (Kramer: column 4, lines 10-15; Kramer: column 6, lines 50-5 with figures 6, 6a, 6b,6c; Kramer: column 11, lines 26-35 with Migdal: column 22, lines 24-35; Migdal: column 3, lines 20-31; Kramer: column 13, lines 45-67; Kramer: column 13, lines 50-67; Kramer: column 13, lines 50-67) wherein: said detection unit detects two shapes having same height information (Kramer: column 6, lines 49-67) and said deletion unit deletes shape information of one of the two shapes amends shape information of the other shape, and integrates shape information of the two shapes into shape information of one shape (design choice: Kramer, column 3, lines 55-59 with Migdal: column 10, lines 15-21).

**Claim 8:** The apparatus according to claim 5, (Kramer: column 4, lines 10-15; Kramer: column 6, lines 50-5 with figures 6, 6a, 6b,6c; Kramer: column 11, lines 26-35 with



Art Unit: 2123

Migdal: column 22, lines 24-35; Migdal: column 3, lines 20-31; Kramer: column 13, lines 45-67; Kramer: column 13, lines 50-67; Kramer: column 13, lines 50-67) wherein: said detection unit detects two or more shapes having a same arrangement plane information and same height information (Kramer: column 6, lines 49-67; ); and said deletion unit amends shape information of one of the two or more shapes deletes shape information of other shapes (Migdal: column 10, lines 15-21; Kramer: column 14, lines 16-32), and integrates shape information of the two or more shapes into shape information of one shape.

**Claim 9:** The apparatus according to claim 5, (Kramer: column 4, lines 10-15; Kramer: column 6, lines 50-5 with figures 6, 6a, 6b, 6c; Kramer: column 11, lines 26-35 with Migdal: column 22, lines 24-35; Migdal: column 3, lines 20-31; Kramer: column 13, lines 45-67; Kramer: column 13, lines 50-67; Kramer: column 13, lines 50-67) wherein: said detection unit detects two or more shapes defined as pattern attributes (Migdal: column 10, lines 15-21; Kramer: column 14, lines 16-32; Kramer: column 13, lines 45-67); and said deletion unit amends shape information of one of the two or more shapes (Migdal: column 6, lines 60-64, with column 9, lines 1-5) deletes shape information of other shapes, and integrates shape information of the two or more shapes into shape information of one shapes (design choice: Kramer, column 3, lines 55-59 with Migdal: column 10, lines 15-21).

**Claim 10:** The apparatus according to claim 1, (Kramer: column 4, lines 10-15; Kramer: column 6, lines 50-5 with figures 6, 6a, 6b,6c; Kramer: column 11, lines 26-35 with Migdal: column 22, lines 24-35; Migdal: column 3, lines 20-31; Kramer: column 13,lines 45-67) wherein: said detection unit comprises: a deletion target storage unit storing the list of the shapes to be deleted (Migdal: column 22, lines 24-36 with Kramer: column 4, lines 10-15); and an amendment target storage unit storing the list of the shapes to be amended (Kramer: column 4, lines 10-15).

**Claim 11:** The apparatus according to claim 10, (Kramer: column 4, lines 10-15; Kramer: column 6, lines 50-5 with figures 6, 6a, 6b,6c; Kramer: column 11, lines 26-35 with Migdal: column 22, lines 24-35; Migdal: column 3, lines 20-31; Kramer: column 13,lines 45-67) wherein said deletion unit amends the shape information of the shapes to be amended (Kramer: column 4, lines 10-15) according to at least one of vertex coordinate information (Kramer: column 6, line 35-67; Kramer: column 6, lines 50-5 with figures 6, 6a, 6b,6c) and height information included in deleted shape information (Migdal: column 9, lines 1-5 with Kramer: column 6, line 35-67; Kramer: column 6, lines 50-5 with figures 6, 6a, 6b,6c).

**Claim 12:** The apparatus according to claim 1, (Kramer: column 4, lines 10-15; Kramer: column 6, lines 50-5 with figures 6, 6a, 6b,6c; Kramer: column 11, lines 26-35 with Migdal: column 22, lines 24-35; Migdal: column 3, lines 20-31; Kramer: column 13,lines 45-67) wherein said construction unit comprises a unit for amending arrangement reference

information (Kramer: column 4, lines 10-15), included in the remaining shape information (Migdal: column 22, lines 25-35), and reconstructs the three-dimensional model according to the amended arrangement reference information.

**Claim 13:** The apparatus according to claim 1, (Kramer: column 4, lines 10-15; Kramer: column 6, lines 50-5 with figures 6, 6a, 6b,6c; Kramer: column 11, lines 26-35 with Migdal: column 22, lines 24-35; Migdal: column 3, lines 20-31; Kramer: column 13, lines 45-67) wherein said construction unit comprises a unit for generating a pseudo shape corresponding to arrangement reference information included in the remaining shape information (Kramer: column 6, lines 50-5 with figures 6, 6a, 6b,6c), and reconstructs the three-dimensional model the pseudo shape (Kramer: column 3, lines 5-20 “profile design”) without amending the arrangement reference information (Migdal: column 22, lines 25-36).

**Claim 14:** A computer-readable storage medium storing a program used to direct a computer to perform: detecting one or more redundant shapes from a plurality of shapes forming a three-dimensional model of an object by comparing coordinates; and generating a list of shapes to be deleted and a list of shapes to be amended among the one or more redundant shapes responsive to the coordinate based comparison; deleting shape information of shapes in the list of the shapes to be deleted, and amending shape information of shapes in the list of the shapes to be deleted, and amending shape information of shapes in the list of the shapes to be amended; and

Art Unit: 2123

reconstructing a three-dimensional model of the object according to remaining shape information including the amended shape information and shape information of shapes other than the one or more redundant shapes.

**Claim 15:** A method of optimizing a model, comprising (Migdal: column 44, lines 1-5): automatically detecting one or more redundant shapes from a plurality of shapes (Kramer: column 13, lines 45-67) forming a three-dimensional model of an object, by comparing shape coordinates and generating a list of shapes (Kramer: column 11, lines 26-35 with Migdal: column 22, lines 24-35) to be deleted and a list of shapes to be amended among the one or more redundant shapes responsive to the coordinate comparison; automatically deleting shape information of shapes in the list of the shapes to be deleted (Migdal: column 22, lines 25-35), and amending shape information of shapes in the list of the shapes to be amended (Migdal: figure 12 with column 21, lines 22-59); and automatically reconstructing a three-dimensional model of the object according to remaining shape (Kramer: column 4, lines 9-15; Migdal: column 10, lines 15-21) information including the amended shape information and shape information of shapes other than the one or more redundant shapes.

**Claim 16:** A model optimization apparatus, (Migdal: column 44, lines 1-5) comprising: detection means for detecting one or more redundant shapes from a plurality of shapes forming a three-dimensional model of an object by comparing shape coordinates and generating a list of shapes (Kramer: column 13, lines 45-67) to be deleted and a list of

shapes to be amended among the one or more redundant shapes responsive to the coordinate based comparison; deletion means for deleting shape information of shapes in the list of the shapes to be deleted (Kramer: column 27, claim 17 with Migdal: column 8, lines 65-67, column 22, lines 25-36), and amending shape information of shapes in the list of the shapes to be amended; and construction means for reconstruction a three-dimensional model of the object according to remaining shape (Migdal: column 10, lines 15-21) information including the amended shape information and shape information of shapes other than one or more redundant shapes (Migdal: column 20, lines 15-30) .

### ***Correspondence Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mr. Tom Stevens whose telephone number is 571-272-3715, Monday-Friday (8:00 am- 4:30 pm) or contact Supervisor Mr. Kevin Teska at (571) 272-3716. Fax number is 571-273-3715

Any inquires of general nature or relating to the status of this application should be directed to the Group receptionist whose phone number is (571) 272-1400

March 7, 2005

THS



KEVIN. TESKA  
SUPERVISORY  
PATENT EXAMINER